Calibration and Calibration Verification of On-line Turbidimeters

If using on-line turbidimeters for compliance reporting the following guidelines must be followed for calibration and calibration verification:

Calibration – Quarterly using the Manufacturer's Instructions

Calibration of the on-line turbidimeter for both combined filter effluent monitoring and individual filter turbidity must be performed at least quarterly according to the manufacturer's instructions. It is very important to follow the manufacturer's instructions for calibration; this will help to ensure that calibration verification results are within the specified limits.

Maintenance must also be performed quarterly or more frequently if problems are noted. The lamp should be changed on an annual basis. An SOP must be available documenting the procedure used by the laboratory for calibration as well as maintenance of the on-line turbidimeters.

A bench-top turbidimeter must not be used for calibrating the on-line turbidimeter. This can introduce error into the readings.

After calibration, the calibration must be verified by using the calibration verification procedure listed below.

Calibration Verification

Calibration verification of on-line turbidimeters must be performed weekly for both combined filter effluent monitoring and individual filter turbidity.

Calibration verification must be performed using primary or secondary standards at 0.5 NTU. Results of the calibration verification standard must be within $\pm$ 10% of the true value unless the manufacturer of the on-line turbidimeter has more stringent requirements. Records must be maintained for the weekly calibration verifications and if results do not meet the $\pm$ 10% criteria, records must indicate that the on-line turbidimeter has been recalibrated and is capable of reading the calibration verification standard within $\pm$ 10% of the true value.

Records must be maintained by the laboratory for all calibrations and calibration verifications performed on the on-line turbidimeters along with any maintenance performed. The minimum information required is the date and time, analyst's initials, standard true value, standard reading, indication if maintenance is performed, and the standard source (i.e. formazin, StablCal™, ICE-PIC™, etc.) for the primary and secondary standards.

Definitions:

Calibration: A procedure, which checks or adjusts an instrument's accuracy by comparison with a defined standard or reference.

Calibration Verification: A procedure used to check whether or not the calibration of the instrument is within certain limits.

Primary standard: A standard used to calibrate the instrument response with respect to analyte concentration. Formazin, StablCal, and AMCO-AEPA-1 are considered primary standards by the EPA for turbidity.

Secondary standard: A standard that the manufacturer (or an independent testing organization) has certified will give instrument calibration results equivalent (within certain limits) to the results obtained when the instrument is calibrated with primary standard i.e., formazin. A secondary standard is used for daily or weekly calibration verification and is monitored periodically for deterioration using one of the primary standards.